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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/625,557 | 07/24/2003 | Shigeo Kigo | P23981 | 8098 |
| 7055 | 7590 | 03/30/2006 | EXAMINER | |
| GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191 | | | EISEN, ALEXANDER | |
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DATE MAILED: 03/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/625,557

Applicant(s)

KIGO ET AL.

Examiner

Alexander Eisen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/868,660.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2-28-04, 10-18-05, 7-20-04, 3-8-04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/868660, filed on 5 July 2001.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 3, 4, 9, 10 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claim 3 recites in lines 17 and 18-19 on page 60 "said interconnector". There is no antecedent basis for such limitation. Recited in line 13 on page 60 "a first interconnector" should read – an interconnector -, or lines 17-19 should read – said first interconnector-. Appropriate correction would overcome this rejection.
5. Claim 4 in line 7 on page 61 reads: "said interconnection portion". There is no antecedent basis for such limitation. Recited in line 4 "an interconnector" should read – an interconnector portion -, or line 7 should read – said interconnector-. Appropriate correction would overcome this rejection.
6. Claim 9 recites in lines 4 and 6 on page 64 "said interconnector". There is no antecedent basis for such limitation. Recited in line 23 on page 63 "a first interconnector" should read – an interconnector -, or lines 17-19 should read – said first interconnector-. Appropriate correction would overcome this rejection.

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7. Claim 10 in lines 18 and 20 on page 64 reads: "said interconnection portion". There is no antecedent basis for such limitation. Recited in line 15 "an interconnector" should read – an interconnector portion -, or lines 18 and 20 should read – said interconnector-. Appropriate correction would overcome this rejection.

8. Claim 13 recites "a switching element" in line 11, page 66 and then "said transistor" in line 13, page 66. There is no antecedent basis for such limitation. The following prior art based rejection is made in assumption that "a switching element" is replaced by "a transistor".

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Higgins et al., US 4,707,692, herein after Higgins.

With respect to claim 1 Higgins discloses a driving circuit that drives a display panel 100 (FIG. 2) having an electrode 210, comprising a recovering capacitive element 315 (FIG. 3) that recovers a charge from the electrode of the display panel; a switcher MODUP/MODDOWN (FIGS. 2-3) connected to the recovering capacitive element; an interconnector (wiring surrounding the switcher and connected to it) connected to said switcher; and a frequency reducer 312 connected in parallel with the switcher that is operable to reduce a resonance frequency of an LC resonance resulting from a parasitic capacitance of said switcher and an inductance component of said interconnector, wherein one of the charge is supplied to the

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electrode of the display panel from the recovering capacitive element through the switcher and the interconnector, and the charge is recovered to the recovering capacitive element from the electrode of the display panel (see FIGS. 2-4; col. 3, line 46 – col. 4, line 57).

As pertaining to claim 2, as can be seen from timing diagram in FIG. 4D the resonant frequency is well below 30 MHz.

As pertaining to claim 3, Higgins discloses a driving circuit 230 that drives a display panel 100 having an electrode 210, comprising a recovering capacitive element 315 that recovers a charge from the electrode of the display panel; a switcher MODUP/MODDOWN connected to said recovering capacitive element; an interconnector connected to said switcher (as in FIG. 2); and a frequency reducer having a capacitive element 312 (col. 3, lines 60-64) connected in parallel with said switcher that is operable to reduce a resonance frequency of an LC resonance resulting from a parasitic capacitance of said switcher and an inductance component of said interconnector, wherein said charge is supplied to the electrode of the display panel from said recovering capacitive element through said switcher and said interconnector, and said charge is recovered to said recovering capacitive element from the electrode of the display panel.

As pertaining to claim 4, Higgins discloses a driving circuit 230 that drives a display panel 100 having an electrode 210, comprising a recovering capacitive element 315 that recovers a charge from the electrode of the display panel; a switcher MODUP/MODDOWN connected to said recovering capacitive element; an interconnector connected to said switcher; and a capacitor 312 connected in parallel with said switcher that is operable to reduce a resonance frequency of an LC resonance resulting from a parasitic capacitance of said switcher and an inductance component of said interconnection portion, wherein one of said charge is supplied to the

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electrode of the display panel from said recovering capacitive element through said switcher and said interconnector, and said charge is recovered to said recovering capacitive element from the electrode of said display panel.

As pertaining to claim 5, Higgins discloses a driving circuit 230 that drives a display panel 100 having an electrode 210, comprising a recovering capacitive element 315 that recovers a charge from the electrode of the display panel; a transistor MODDOWN connected to said recovering capacitive element; an interconnector connected to said transistor; and a frequency reducer 312 connected in parallel with a source and a drain region of said transistor (FIGS. 2-3), wherein one of said charge is supplied to the electrode of said display panel from said recovering capacitive element through said transistor and said interconnector, and said charge is recovered to said recovering capacitive element from the electrode of said display panel.

As pertaining to claim 6, Higgins discloses a driving circuit 230 that drives a display panel 100 having an electrode 210, comprising a recovering capacitive element 315 that recovers a charge from the electrode of the display panel; a transistor MODDOWN connected to said recovering capacitive element; an interconnector connected to said transistor; and a frequency reducer having a capacitive element 312 connected in parallel with a source and a drain of said transistor, wherein one of said charge is supplied to the electrode of the display panel from said recovering capacitive element through said transistor and said interconnector, and said charge is recovered to said recovering capacitive element from the electrode of the display panel.

As pertaining to claim 7, Higgins discloses a driving circuit 230 that drives a display panel 100 having an electrode 230, comprising a recovering capacitive element 315 that recovers a charge from the electrode of the display panel; a transistor MODDOWN connected to said

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recovering capacitive element; an interconnector connected to said transistor; and a capacitor 312 connected in parallel with a source and a drain of said transistor, wherein one of said charge is supplied to the electrode of the display panel from said recovering capacitive element through said transistor and said interconnector, and said charge is recovered to said recovering capacitive element from the electrode of the display panel.

As pertaining to claim 8, Higgins discloses a display device, comprising a display panel 100 having an electrode 210; and a driver 230 that drives the electrode of said display panel, said driver comprising a recovering capacitive element 315 that recovers a charge from the electrode of said display panel; a switcher MODDOWN connected to said recovering capacitive element; an interconnector connected to said switcher, and a frequency reducer 312 connected in parallel with said switcher that is operable to reduce a resonance frequency of an LC resonance resulting from a parasitic capacitance of said switcher and an inductance component of said interconnector, wherein one of said charge is supplied to said electrode of said display panel from said recovering capacitive element through said switcher and said interconnector, and said charge is recovered to said recovering capacitive element from said electrode of said display panel.

As pertaining to claim 9, Higgins discloses a display device, comprising a display panel 100 having an electrode 210; and a driver 230 that drives said electrode of said display panel, said driver comprising a recovering capacitive element 315 that recovers a charge from said electrode of said display panel; a switcher MODDOWN connected to said recovering capacitive element; a first interconnector connected to said switcher; and a frequency reducer having a capacitive element 312 connected in parallel with said switcher that is operable to reduce a

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resonance frequency of an LC resonance resulting from a parasitic capacitance of said switcher and an inductance component of said interconnector, wherein one of said charge is supplied to said electrode of said display panel from said recovering capacitive element through said switcher and said interconnector, and said charge is recovered to said recovering capacitive element from said electrode of said display panel.

As pertaining to claim 10, Higgins discloses a display device, comprising a display panel 100 having an electrode 210; and a driver 230 that drives said electrode of said display panel, said driver comprising: a recovering capacitive element 315 that recovers a charge from said electrode of said display panel; a switcher MODDOWN connected to said recovering capacitive element; an interconnector connected to said switching element; and a capacitor 312 connected in parallel with said switcher that is operable to reduce a resonance frequency of an LC resonance resulting from a parasitic capacitance of said switcher and an inductance component of said interconnection portion, wherein one of said charge is supplied to said electrode of said display panel from said recovering capacitive element through said switcher and said interconnection portion, and said charge is recovered to said recovering capacitive element from the electrode of said display panel.

As pertaining to claim 11, Higgins discloses a display device, comprising a display panel 100 having an electrode 210; and a driver 230 that drives said electrode of said display panel, said driver comprising a recovering capacitive element 315 that recovers a charge from said electrode of said display panel; a switcher MODUP connected said recovering capacitive element; a transistor MODDOWN connected to said recovering capacitive element; an interconnector connected to said transistor; and a frequency reducer 312 connected in parallel

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with a source and a drain of said transistor, wherein one of said charge is supplied to said electrode of said display panel from said recovering capacitive element through said transistor and said interconnector, and said charge is recovered to said recovering capacitive element from said electrode of said display panel.

As pertaining to claim 12, a display device, comprising a display panel 100 having an electrode 210; and a driver 230-232 that drives said electrode of said display panel, said driver comprising a recovering capacitive element 315 that recovers a charge from said electrode of said display panel; a switcher MODUP connected to said recovering capacitive element; a transistor MODDOWN connected to said recovering capacitive element; an interconnector connected to said transistor; and a frequency reducer having a capacitive element 312 connected in parallel with a source and a drain of said transistor, wherein one of said charge is supplied to said electrode of said display panel from said recovering capacitive element through said transistor and said interconnector, and said charge is recovered to said recovering capacitive element from said electrode of said display panel.

As pertaining to claim 13, Higgins discloses a display device, comprising a display panel 100 having an electrode 210; and a driver 230-232 that drives said electrode of said display panel, said driver comprising a recovering capacitive element 315 that recovers a charge from the electrode of said display panel; a switching element MODDOWN connected to said recovering capacitive element; an interconnector connected to a transistor; and a capacitor connected 312 in parallel with a source and a drain of said transistor, wherein one of said charge is supplied to said electrode of said display panel from said recovering capacitive element

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through said transistor and said interconnector, and said charge is recovered to said recovering capacitive element from said electrode of said display panel.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sano et al., US 5,994,929, discloses an energy recovery circuit for driving a display.

Weber et al., US 4,866,349, discloses an energy recovery circuit for driving a display.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Eisen whose telephone number is (571) 272-7687. The examiner can normally be reached on M-F (9:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard A. Hjerpe can be reached on (571) 272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alexander Eisen
Primary Examiner
Art Unit 2674

13 March 2006